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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,547	01/03/2005	Yuya Hasegawa	P26498	9697
7055	7590	03/23/2006	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			MULLINS, BURTON S	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/518,547	Applicant(s) HASEGAWA ET AL. 	
	Examiner Burton S. Mullins	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-23 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 06 April 2006 has been considered by the examiner.

Claim Rejections - 35 USC § 112

3. Claims 4-11 and 17-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 4 and 17-18, “antiphase manner” is vague and indefinite. The manner of coil excitation is not clear from this phrase. In claim 8, the language “overlap each other in three dimensions when viewed in the axial direction” is indefinite, confusing language, because only two dimensions are seen “when viewed in the axial direction” and therefor it is not clear how “three dimensional” overlap occurs. In claim 11, the claim language is convoluted and indefinite. The “other end faces of the magnets opposite to the contacting opposed end faces” lacks antecedent basis. The term “flush” is not understood because the magnet axis is radially distant the cylindrical surface on which the stationary elements are formed. In claims 19 and 21, “undergoing...the force” is vague and indefinite.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Nikaido (US 4,099,106). Nikaido teaches a compound motor including: a casing 35/36/37; a stationary member which has a coil member 14/20 & 26/32 and is mounted in the casing; and a movable member (armature) 1 which includes a moving element (corresponding rotary pole) 5 and is supported by the casing; the moveable element 1 has a shaft 2 and is supported by the casing so as to be moved in an axial direction and in a rotational direction (abstract), wherein electric current flows through the coil member 14/20 & 26/32 such that the moving element moves in the axial (linear) direction (coils 26&32, c.4, lines 34-60) and in the rotational direction (coils 14/20, c.4, lines 17-34); wherein the stationary member includes a first stationary member for imparting to the movable member a force oriented in the axial direction (poles 23/24/30/31) and a second stationary member for imparting to the moveable member a force oriented in the rotational direction (poles 11a-11f/12a-12f & 17a-17f/18a-18f); wherein the coil member includes a first coil 14/20 for exciting a first magnetic path passing through the stationary member and a second coil 26/32 for exciting a second magnetic path passing through the second stationary member (see respective flux lines in Fig.3).

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6. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Chun et al. (US Pat.Appl.Publ. 2001/043016). Chun teaches a rotary-linear motor including: a casing 11 (Fig.3); a stationary member which has a coil member 12/14 and is mounted in the casing; and a movable member which includes a moving element 20 and is supported by the casing; the moveable element has a shaft 21 and is supported by the casing (inherent) so as to be moved in an axial direction and in a rotational direction (§2), wherein electric current flows through the coil member 12/14 such that the moving element moves in the axial direction and in the rotational direction (§25-§33); wherein the stationary member includes a first stationary member (coils 12) for imparting to the movable member a force oriented in the axial direction and a second stationary member (coils 13) for imparting to the moveable member a force oriented in the rotational direction; wherein the coil member includes a first coil 12 for exciting a first magnetic path passing through the stationary member and a second coil 13 for exciting a second magnetic path passing through the second stationary member (Fig.3).

Regarding claims 2-3, the moving element 20 includes radially-oriented magnets (Fig.4b), with axially-symmetric magnets 23a.

Regarding claim 4, as best understood, the coils 12 and 14 of respective first and second stationary members are symmetric with respect to the axis of rotation (Fig.4a), the first coil member includes a pair of first coils 12 and the second coil member includes a pair of second coils 13 (Fig.4a), and the coils 12 and 14 are each excited in an “antiphase” manner because this is inherent to the three-phase U, V, W, U', V', W' windings used for the coils.

7. Claims 1-4 and 6-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Motohashi et al. (WO 2004/047670). The applied reference has a common assignee with the

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instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131. Motohashi teaches an actuator 6 comprising a casing 2; a stationary member 10/13 which has a coil member 11/14 (Fig.2) and is mounted in the casing; and a movable member 9/12 which includes a moving element and is supported by the casing; the moveable element has a shaft 8 and is supported by the casing (inherent) so as to be moved in an axial direction and in a rotational direction (abstract), wherein electric current flows through the coil member 11/14 such that the moving element 9/12 moves in the axial direction and in the rotational direction, respectively; wherein the stationary member includes a first stationary member 10 for imparting to the movable member a force oriented in the axial direction and a second stationary 13 member for imparting to the moveable member a force oriented in the rotational direction; wherein the coil member includes a first coil 11 for exciting a first magnetic path passing through the stationary member 10 and a second coil 14 for exciting a second magnetic path passing through the second stationary member 13.

Regarding claims 2-3, the moving element 9/12 includes radially-oriented, axially-symmetric magnets (Fig.2).

Regarding claim 4, as best understood, the coils 11 and 14 of respective first and second stationary members are symmetric with respect to the axis of rotation (Fig.2), the first coil member includes a pair of first coils 11 and the second coil member includes a pair of second

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coils 14 (Fig.2), and the coils 11 and 14 are each excited in an “antiphase” manner (p.8, lines 5-23; Fig.5).

Regarding claim 6, the magnets 9 have opposite magnetization directions and each first stationary element 10 comprises an E-shaped magnetic part with three poles arranged in the axial direction (Fig.2).

Regarding claim 7, each second stationary element 13 comprises a C-shaped part with two magnetic poles arranged in the axial direction (Fig.2).

Regarding claim 8, as best understood, opposite end portions of the first and second stationary elements overlap when viewed in the axial direction.

Regarding claim 9, a gap exists between the poles of the first and second stationary elements.

Regarding claim 10, the magnet poles rotate so as to traverse the recesses (Fig.2)

Regarding claim 11, as best understood, opposed end faces of magnets 9 contact each other and the magnets 12 have ends which are “flush”, i.e., parallel, with the ends of the first stationary element 10.

Regarding claim 12, note axial resonant springs 15/17 (Fig.2).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 12 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over either or Chun, as applied to claim 1, further in view of Ichii et al. (JP 2002-199689). Neither Nikaido nor Chun teach an axial resonant spring for effecting axial resonant motion of the moving element (claim 12); or three springs oriented according to claim 14.

Ichii teaches a linear oscillator including axial resonant springs 91-93 between the moving element 11 and the casing 71 for the purpose of oscillating the plunger (abstract). The spring 91 is a first spring between the casing 71 and the moving element 11, spring 92 is between the moving element 11 and the further moving element 51, and spring 93 is between the further moving element 51 and the casing 71.

It would have been obvious to modify either Nikaido or Chun and provide axial resonant springs per Ichii to oscillate the moving element.

Regarding claims 15-16, in each of Nikaido and Chun, respective first and second stationary members impart axial and rotational forces to the first and second portions of moveable members.

Regarding claims 17-18, see the rejection of claims 2-4 over Chun above for a teaching of these elements.

Allowable Subject Matter

10. Claims 5 and 19-22 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Regarding claim 5, the prior art does not teach that an axial plane containing the first stationary elements intersects orthogonally an axial plane containing the second stationary elements. Regarding claims 19 and 20, the prior art, including

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Chun and Nikaido, do not teach E-shaped first stationary element magnetic parts with three poles arranged axially.

11. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach a rotational resonant spring between the moving element and the casing, for effecting resonant motion of the moving element in the rotational direction.


Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have

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questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
20 March 2006